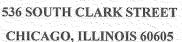


#### UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

### REGION 5 CHICAGO REGIONAL LABORATORY





Date:

11/9/2015

Subject:

Review of Region 5 Data for Tower Standard

To:

LUST, LCD, US EPA Region 5 77 West Jackson Boulevard

Chicago, IL 60605

From:

Greg Mitsakopoulos, Chemist

US EPA Region 5 Chicago Regional Laboratory

The data transmitted under this cover memo successfully passed CRL's data review procedures as documented in the current Quality Management Plan and applicable Standard Operating Procedures. In accordance with EPA's Guidance on Environmental Data Verification and Data Validation (Document EPA QA/G-8), CRL verified and validated the data but does not perform data quality assessment based on project plans.

This report was reviewed and the information provided herein accurately represents the analysis performed.

X

Please contact the analyst with any technical report issues, Amanda Wroble at (312)-353-0375 for sample project concerns, and Sylvia Griffin at (312)-353-9073 with data transmittal questions. Thank you.

Attached are Results for: Tower Standard

/ /

Data Management Coordinator and DateTransmitted

Analyses included in this report:

Metals full ICP (S)

Page 1 of 10



536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

LUST, LCD, US EPA Region 5 77 West Jackson Boulevard Chicago IL, 60605 Project: Tower Standard

Project Number: [none]
Project Manager: Bob Egan

Reported: Nov-09-15 16:07

### **Analysis Case Narrative**

#### **General Information**

work order	logged matrix	sample count	received on
1509014	soil -	5	9/15/15
1509015	soil	4	9/16/15
1509019	soil	8	9/17/15

The requested analytes were arsenic, barium, cadmium, chromium, lead and silver by the inductively coupled plasma-atomic emission spectroscopy (ICP-AES) technique. All holding times were met. I, Greg Mitsakopoulos, was the designated analyst for the samples and may be reached at (312) 353-0377. Analyst K. Swan performed the sample preparation steps through digestion.

The data are to be filed under work order 1509014.

process

SOP used

sample digestion

Metals025 v. 2 (EPA Method 200.2)

analysis

Metals004 v. 2 (EPA Method 200.7/SW-846: 6010C)

### Sample Analysis and Results

The data reported herein met the data quality objectives in the SOPs listed above.

#### **Ouality Control**

All quality control (QC) audits for the study analytes were within CRL's limits or did not result in qualification of the data.

Page 2 of 10



536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

LUST, LCD, US EPA Region 5 77 West Jackson Boulevard Chicago IL, 60605

Project: Tower Standard

Project Number: [none] Project Manager: Bob Egan Reported: Nov-09-15 16:07

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH5	1509014-01	Soil	Sep-14-15 12:00	Sep-15-15 10:30
BH9	1509014-02	Soil	Sep-14-15 13:55	Sep-15-15 10:30
BHI0	1509014-03	Soil	Sep-14-15 14:15	Sep-15-15 10:30
BH11	1509014-04	Soil	Sep-14-15 14:55	Sep-15-15 10:30
BH12	1509014-05	Soil	Sep-14-15 15:10	Sep-15-15 10:30
BH17	1509015-01	Soil	Sep-15-15 08:25	Sep-16-15 10:30
BH21	1509015-02	Soil	Sep-15-15 10:30	Sep-16-15 10:30
BH22B	1509015-03	Soil	Sep-15-15 10:55	Sep-16-15 10:30
BH25	1509015-04	Soil	Sep-15-15 13:40	Sep-16-15 10:30
BH29	1509019-01	Soil	Sep-16-15 08:20	Sep-17-15 10:02
ВН31В	1509019-02	Soil	Sep-16-15 10:45	Sep-17-15 10:02
BH31B	1509019-03	Soil	Sep-16-15 10:55	Sep-17-15 10:02
ВН32В	1509019-04	Soil	Sep-16-15 11:20	Sep-17-15 10:02
BH33	1509019-05	Soil	Sep-16-15 11:40	Sep-17-15 10:02
BH34	1509019-06	Soil	Sep-16-15 12:20	Sep-17-15 10:02
BH35	1509019-07	Soil	Sep-16-15 12:55	Sep-17-15 10:02
ВН36	1509019-08	Soil	Sep-16-15 14:30	Sep-17-15 10:02

Page 3 of 10



536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

LUST, LCD, US EPA Region 5 77 West Jackson Boulevard Chicago IL, 60605 Project: Tower Standard

Project Number: [none] Project Manager: Bob Egan Reported:

Nov-09-15 16:07

### Metals by ICP using EPA 200.7 (modified) US EPA Region 5 Chicago Regional Laboratory

BH5 (1509014-01) Soil Sampled: Sep-14-15 12:00 Received: Sep-15-15 10:30

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U			4.2	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium	16			0.32	'n	in.	n	18	н
Cadmium	U			0.21	. "	u	n.	11	Ħ
Chromium	12			0.53	**	·u.	n)	tf.	н
Lead	Ü			3.2	Ħ	ja.	н.	Ĥ	13
Selenium	<b>U</b> .	A		5.3	it i	46	Ħ	18	it.
Silver	Ü			1.1	Ĥ	માં	n	nì	· · · · · · · · · · · · · · · · · · ·

BH9 (1509014-02) Soil Sampled: Sep-14-15 13:55 Received: Sep-15-15 10:30

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U	***************************************		4.5	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium	26			0.33	н	-11	11-	18	ir
Cadmium	U			0.22	13	'H	H.	11	tt
Chromium	28			0.56	51	n-	19	ii.	n
Lead	5.8			3.3	Ü	ж	ņ:	t#	ų
Selenium	U			5.6	ŧ	-11	H.	n ii	<b>i</b> j
Silver	U			1.1	n	. W.	<b>9</b> °	#	Ĥ.

BH10 (1509014-03) Soil Sampled: Sep-14-15 14:15 Received: Sep-15-15 10:30

Analyte	Result C	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U.			4.0	mg/kg	1	B151052	Sep-25-15	Nov-04-15
Barium	17			0.30	11 -	71.	n	Ħ	ú
Cadmium	<u>. v.</u>	era de la composición dela composición de la composición dela composición de la composición de la composición de la comp		0.20	ń.	.0-	1)		
Chromium	9.5			0.50	, B	10.	11.	it	O
Lead	14			3.0	11	H.	100		13
Selenium	Ū			5.0	n"	Э.	10:	ń	u u
Silver	U			1.0	Ü	U	ii .	n	ŧŧ

Page 4 of 10



536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

LUST, LCD, US EPA Region 5 77 West Jackson Boulevard Chicago IL, 60605 Project: Tower Standard Project Number: [none] Project Manager: Bob Egan

Reported: Nov-09-15 16:07

## Metals by ICP using EPA 200.7 (modified) US EPA Region 5 Chicago Regional Laboratory

BH11 (1509014-04) Soil Sampled: Sep-14-15 14:55 Received: Sep-15-15 10:30

Analyte		ags / Reporting alifiers MDL Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U	4.5	mg/kg	1	B151052	Sep-25-15	Nov-04-15
Barium	32	0.34	11	it , '	11	Ħ	n desire
Cadmium	U	0.22	ty.,	Ħ	11	Ħ	# 1 a facility is
Chromium	19	0.56	ii:	ń	0.	ń	₩ <sup>™</sup> ×
Lead	3.8	3.4	żŧ	m	t# ·	t <del>i</del>	ų
Selenium	$\mathbf{U}$	5.6	Ĥ ·	ri	er:	19	
Silver	U,	1.1	Ħ	Ħ	ti ·	n	u

BH12 (1509014-05) Soil Sampled: Sep-14-15 15:10 Received: Sep-15-15 10:30

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U			4.3	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium 44 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	27			0.32	. 9	a	n estate	u	# And the second
Cadmium	U			0.22	ü	9	#-	ti .	н
Chromium	18			0.54	tt.	u .	W.	9	n
Lead	U		*	3.2	tt.	11	Ħ	ti.	ñ
Selenium	U			5.4	11	**	M"	11	34
Silver	U			1.1	JM.	įt.	n	11	H

BH17 (1509015-01) Soil Sampled: Sep-15-15 08:25 Received: Sep-16-15 10:30

		The second secon									
Analyte	Res	sult	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	
Arsenic	Ţ	J <sub>.</sub>			4.4	mg/kg	1	B15I052	Sep-25-15	Nov-04-15	
Barium	1	6			0.33	11	Ü	11	n	u	
Cadmium	Ţ	J		į.	0.22	θ.	ù	at .	· n	и	
Chromium	1	3			0.55	11	tt	n ·	u	18	
Lead	3.	4			3.3	11	11	н	11	16	
Selenium	,	I			5.5	#	11	'n		n	
Silver	Ţ	J			1.1	ni.	ti	**	<b>u</b> 5	16	

Page 5 of 10



536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

LUST, LCD, US EPA Region 5

77 West Jackson Boulevard Chicago IL, 60605 Project: Tower Standard

Project Number: [none]
Project Manager: Bob Egan

Reported:

Nov-09-15 16:07

### Metals by ICP using EPA 200.7 (modified) US EPA Region 5 Chicago Regional Laboratory

BH21 (1509015-02) Soil Sampled: Sep-15-15 10:30 Received: Sep-16-15 10:30

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U	elilos estales de la companio de la		4.1	mg/kg	i	B15I052	Sep-25-15	Nov-04-15
Barium	22			0.31	The second	b .	# .	н.	#-
Cadmium	Ü			0.21	19	İt	Ħ	#	ń;
Chromium	18	* /		0.52	***	Ħ	14-	**	n-
Lead	U			3.1	11	, <b>st</b>	in.	n:	n
Selenium	U			5.2	Ä	Ü	H	n	ii-
Silver			*	1.0	.#.	ņ	н	# -	n.

BH22B (1509015-03) Soil Sampled: Sep-15-15 10:55 Received: Sep-16-15 10:30

Analyte	A THE RESIDENCE OF THE PROPERTY OF THE PROPERT	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	No. 1	U			4.2	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium	The Many	20			0.31	41	ü	n	· iv	Ü
Cadmium		U			0.21	(B) 1	ii .	и	и.	0
Chromium		16			0.52	ir	Ĥ	**	· W	ŧi.
Lead		U			3.1	'm	it	n	19	-41
Selenium		U			5.2	:11.	û.	-ii	0.	.9.
Silver		U			1.0	<b>H</b> .	û	11	H.	ii.

BH25 (1509015-04) Soil Sampled: Sep-15-15 13:40 Received: Sep-16-15 10:30

			Control of the Contro			· · · · · · · · · · · · · · · · · · ·		
Analyte	Service Services	Flags / Result Qualifiers	MDL Reporting	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	-	U	4.5	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium		33	0.34	**	tt	i)	11-	· u
Cadmium		$\mathbf{U}^{-}$	0.22	, We	0	11	ar:	11.
Chromium		21	0.56	ж	tr	n	ii-	. ji
Lead		3.4	3.4	н	н	'n	W.	ăr.
Selenium		~ - ' <b>U</b> '	5.6	·# ·	u	u	ü	ù.
Silver		Ü	1,1	H;	0	u.	. 41.	· ·

Page 6 of 10



536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

LUST, LCD, US EPA Region 5 77 West Jackson Boulevard Chicago IL, 60605 Project: Tower Standard

Project Number: [none]
Project Manager: Bob Egan

Reported: Nov-09-15 16:07

### Metals by ICP using EPA 200.7 (modified) US EPA Region 5 Chicago Regional Laboratory

BH29 (1509019-01) Soil Sampled: Sep-16-15 08:20 Received: Sep-17-15 10:02

Analyte	Flags / Result Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U		4.3	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium	24		0.32	b)	Ħ	<b>9</b> -	in.	11
Cadmium	U		0.22	Ħ-	Tt.	ii-	<del>u</del>	at
Chromium	18		0.54	to .	n	и -	· Hr	
Lead	Ü		3.2	ii-	11	- 70	√ <b>ii</b> °	99
Selenium	Ū		5.4	11	11	n-	-01	a
Silver	U		1.1	0.7	u	ji.	W.	0 .

BH31B (1509019-02) Soil Sampled: Sep-16-15 10:45 Received: Sep-17-15 10:02

Analyte	Result	Flags / Qualifiers MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U		4.3	mg/kg	l	B151052	Sep-25-15	Nov-04-15
Barium	25		0.32	Ñ.	**	ii.	**	и
Cadmium	$\mathbf{U}^{\circ}$		0.22	34 -	n .	it ;	ii,	ii .
Chromium	15		0.54	11		ti .	n	и
Lead	5.2		3.2	186-	rt	0.		n San
Selenium	<b>U</b>		5.4	m.	ŧ	it."	$\theta_{i_0}$	ń
Silver	<b>U</b> .		1.1	. ·	· · · · · ·	ù.	Ħ	, n

BH31B (1509019-03) Soil Sampled: Sep-16-15 10:55 Received: Sep-17-15 10:02

				and the second second				
Analyte	Flags / Result Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U		4.3	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium	23		0.32	ti-	Ħ	.#.	19,	17
Cadmium	U		0.22	Hr.	ít	18	11	u · · ·
Chromium	17		0.54	11	no S	election 14	11	18
Lead	U		3.2	₩-	m	ij.	Ħ	19
Selenium	Ü		5.4	H.	rt	n-	11	u ·
Silver	<b>U</b> :		1.1	łŧ	Ff	<b>H</b> ;	rs.	11

Page 7 of 10



536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

LUST, LCD, US EPA Region 5 77 West Jackson Boulevard Chicago IL, 60605 Project: Tower Standard

Project Number: [none]
Project Manager: Bob Egan

Reported: Nov-09-15 16:07

Metals by ICP using EPA 200.7 (modified)
US EPA Region 5 Chicago Regional Laboratory

BH32B (1509019-04) Soil Sampled: Sep-16-15 11:20 Received: Sep-17-15 10:02

Analyte		Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	* *	U	30000000000000000000000000000000000000		4.3	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium	<u>.</u> .	32			0.32	11	No.	Ĥ,	, it	и
Cadmium		U			0.22	-16-	14	tt.	Ħ	11.
Chromium		26			0.54	18.	(H.)	11	<b>H</b> 2	-11
Lead		3.5			3.2	<b>31</b>	Ħ.	n'	14	***
Selenium		U	a - E		5.4	u.	m,	H.	, dear #1.	***
Silver		U		.5	1.1	-10	# <sup>1</sup>	ni.	. <b>#</b>	36.

BH33 (1509019-05) Soil Sampled: Sep-16-15 11:40 Received: Sep-17-15 10:02

Analyte	Result	Flags / Qualifiers N	ADL .	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U			4.0	mg/kg	1		Sep-25-15	Nov-04-15
Barium	28			0.30	0	Ħ	- <b>H</b>	*#	11
Cadmium	<b>U</b> .			0.20	W.	и	n .	n.	307
Chromium	22			0.50	18	u:	19	Ť,	11
Lead	U	448		3.0	ji.	11.	Ħ	#t."	#:
Selenium	U			5.0	'u	16."	, ir	#:	:0."
Silver	U			1.0	:0-	16	#	41.	11

BH34 (1509019-06) Soil Sampled: Sep-16-15 12:20 Received: Sep-17-15 10:02

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U			4.4	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium	17			0.33	ti	Ħ:	n .	Ħ-	ii '
Cadmium	U	9	4.	0.22	. u	н.	Ħ .		.11
Chromium	11			0.55	ii)	H-	Ĥ:	#t	u.
Lead	U:		a Manager 1	3.3	u.	#	н	11-	<b>11</b> -
Selenium	U			5.5	u	H 2"	и .	18:	11
Silver	$\mathbf{U}$			1.1	II.	н ~	Ĥ.	. 11	A.

Page 8 of 10



536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

LUST, LCD, US EPA Region 5 77 West Jackson Boulevard Chicago IL, 60605 Project: Tower Standard

Project Number: [none]
Project Manager: Bob Egan

Reported: Nov-09-15 16:07

## Metals by ICP using EPA 200.7 (modified) US EPA Region 5 Chicago Regional Laboratory

BH35 (1509019-07) Soil Sampled: Sep-16-15 12:55 Received: Sep-17-15 10:02

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U			4.4	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium	23			0.33	' <b>u</b> .'	#P	ijς.	ù	u
Cadmium	U			0.22	11	#	11	ii .	11
Chromium	13		7	0.55	W.	ų	Ħ.	u	ù
Lead	9.3			3.3	Ή.	Ü .	H.	#	11
Selenium	U			5.5	и,	tt	***	и	11
Silver	U			1.1	ai:	u ,	. It	**	11

BH36 (1509019-08) Soil Sampled: Sep-16-15 14:30 Received: Sep-17-15 10:02

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Arsenic	U			4.2	mg/kg	1	B15I052	Sep-25-15	Nov-04-15
Barium	24			0.31	n	TS .	33	**	ń
18. 3	<b>U</b> :			0.21	n.	ń .	H	н	н
Chromium	13			0.52	it	Ħ	88	н	n
Lead	6.8			3.1	Ħ,	Ĥ	, H.	13	#
Selenium	Ü			5.2	ñ:	Ĥ.	**	**	11
Silver	$\mathbf{U}$			1.0	Me the state of	'H.J.	#17	4	

Page 9 of 10



536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

LUST, LCD, US EPA Region 5 77 West Jackson Boulevard Chicago IL, 60605 Project: Tower Standard

Project Number: [none]
Project Manager: Bob Egan

Reported:

Nov-09-15 16:07

#### **Notes and Definitions**

U-

Not Detected

NR

Not Reported

Page 10 of 10